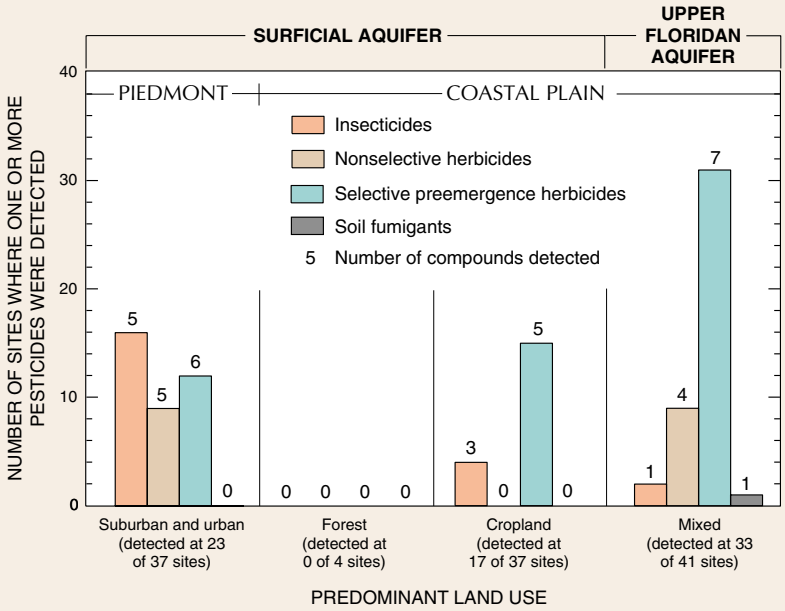
From 8 to 16 pesticides were detected in water samples collected from each of the three ground-water study areas (Frick and Crandall, 1995; Frick, 1997; Hippe, 1997). Pesticides were detected with least frequency in water from surficial aquifers sampled adjacent to cropland and most frequently in samples from springs and wells located in the recharge area of the Upper Floridan aquifer, a karst aquifer that is susceptible to contamination from bacteria and agricultural chemicals.

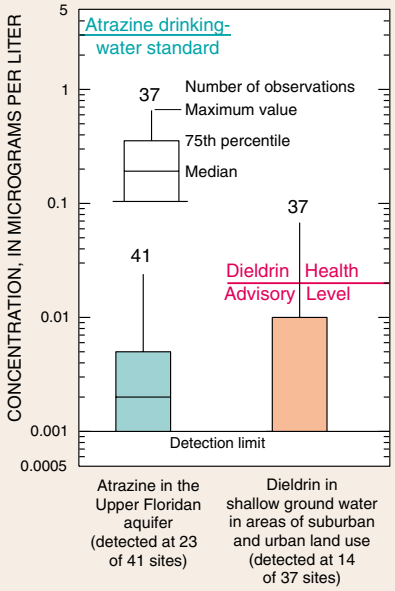
Pesticide concentrations in ground-water samples generally were less than current human health criteria for drinking-water safety. However, dieldrin concentrations in water samples collected during 1994–95 from 5 of 37 sites in Metropolitan Atlanta exceeded the USEPA Health Advisory Level. Dieldrin had been used on agricultural land prior to 1975 and for structural termite control until 1987 (Buell and Couch, 1995). The presence of dieldrin in ground-water samples collected several years after being banned is indicative of the compound's persistence in soils and ground water.

Ground-water samples collected from the recharge area of the Upper Floridan aquifer and from surficial aquifers located in areas of suburban and urban land use contained a broader variety of pesticides than samples collected from shallow ground water adjacent to cropland. Pesticides detected in these study areas include insecticides used for structural and turf insect control and herbicides used for selective preemergence and nonselective weed control. Herbicides used for selective preemergence weed control are the predominant type of pesticide present in ground-water samples from wells adjacent to cropland. Pesticides detected in ground-water samples generally have a larger potential to leach into ground water than many other currently used pesticides that were not detected.

Several of the pesticides detected in ground-water samples are now banned from use (dieldrin and 1,2-dichloropropane) or were in much greater use a decade or more prior to the sampling period (page 12). Atrazine and alachlor were commonly detected in surficial aquifers adjacent to cropland and the Upper Floridan aquifer, but probably were in greater use in the 1970's and 1980's (prior to the resurgence of cotton) when corn and soybeans were a large percentage of the planted acreage. Ground water and associated contaminants commonly are in the subsurface for years or decades between the time they enter the aquifers and the time they discharge to springs and streams. Because of the long residence time, the occurrence of pesticides in ground water from wells often lag any changes in pesticide-use patterns by years or occasionally decades.



Pesticides were detected in ground water in each land-use study area, except for wells situated in mostly forested parts of the Coastal Plain. Herbicides used for selective preemergence weed control were most commonly detected in shallow ground water near cropland and in the Upper Floridan aquifer. Dieldrin, an insecticide, was the most commonly detected pesticide in shallow ground water in areas of suburban and urban land use.



Measured concentrations of atrazine, the most commonly detected compound in the Upper Floridan aquifer, were far below the USEPA drinking-water standard (Nowell and Resek, 1994). Measured concentrations of dieldrin, the most commonly detected pesticide in shallow ground water in Metropolitan Atlanta, exceeded the USEPA Health Advisory Level at 14 percent of sites sampled.